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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Ulrich Weidmann

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EXAMINER

ARNBERG, MEGAN C

ART UNIT

PAPER NUMBER

1796

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/552,908	<b>Applicant(s)</b> WEIDMANN, ULRICH	
	<b>Examiner</b> MEGAN ARNBERG	<b>Art Unit</b> 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 09 January 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-6,8-11 and 13-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6,8-11 and 13-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1/09/2008</u> .   | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Das et al. (U.S. 5,922,448) in view of Blyakhman (U.S. 5,591,811) in further view of Zahir et al. (U.S. Pat. 4,127,615).

Regarding claims 1-6: Das et al. teaches a phenol (abstract) and an imidazole catalyst (col. 8 lines 44-54). Das et al. further teaches adding 15-25% by weight of the imidazole catalyst to a phenol, which is a weight ratio of 15:85 to 25:75 (col. 9 lines 61-67 and col. 8 lines 44-46).

Das et al. does not teach using the imidazole of general formula (I). However, Blyakhman teaches a compound of general formula (I) of the instant application where R<sub>1</sub>, R<sub>2</sub>, and R<sub>3</sub> are each independently of the other hydrogen; alkyl of 1 to 12 carbon atoms; cycloalkyl of 3 to 12 carbon atoms, which could be substituted by alkyl groups of 1 to 4 carbon atoms; cycloalkyl-alkyl of 4 to 20 carbon atoms which can be substituted by alkyl groups of 1 to 4 carbon atoms; aryl of 6 to 10 carbon atoms, which could be substituted by 1 to 3 alkyl groups of 1 to 4 carbon atoms; phenylalkyl of 7 to 15 carbon

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atoms, which could be substituted by 1 to 3 alkyl groups of 1 to 4 carbon atoms; alkenyl of 3 to 12 carbon atoms; alkynyl of 3 to 12 carbon atoms; aromatic or aliphatic acyl group of 3 to 12 carbon atoms or alkyl or aryl of 3 to 12 carbon atoms containing a cyano group or a halogen; R4, R5, R6, R7, R8, and R9 are each independently of the other hydrogen; alkyl of 1 to 12 carbon atoms; cycloalkyl of 3 to 12 carbon atoms, which can be substituted by alkyl groups of 1 to 4 carbon atoms; cycloalkyl-alkyl of 4 to 20 carbon atoms, which can be substituted by alkyl groups of 1 to 4 carbon atoms; aryl of 6 to 10 carbons atoms, which can be substituted by 1 to 3 alkyl groups of 1 to 4 carbon atoms; phenylalkyl of 7 to 15 carbon atoms, which can be substituted by 1 to 3 alkyl groups of 1 to 4 carbon atoms; alkenyl of 3 to 12 carbon atoms; alkynyl of 3 to 12 carbon atoms; halogen; alkoxy of 1 to 12 carbon atoms; or hydroxyl (formula (I) and col. 2 line 59- col. 3 line 16). Das et al. and Blyakhman are combinable because they are both concerned with the same field of endeavor, namely epoxy resins containing imidazoles and phenols. At the time of the invention a person having ordinary skill in the art would have found it obvious to combine the imidazole taught in Blyakhman with the composition of Das et al. and would have been motivated to do so because 1-imidazolylmethyl-2-naphthols are effective catalysts for curing epoxy resins and provide epoxy resin systems with prolonged room temperature stability and fast curing as stated by Blyakhman (abstract).

Das et al. does not teach the specific phenols of the instant application. However, Zahir et al. teaches an epoxy resin, o,o'-diallyl-bisphenol A (col. 2 line 49), imidazole (table I). Das et al. and Zahir et al. are combinable because they are both

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concerned with the same field of endeavor, namely epoxy resins cured with imidazoles and phenols. At the time of the invention a person having ordinary skill in the art would have found it obvious to combine the o,o'-diallyl-bisphenol A (DABA) of Zahir et al. with the composition of Das et al. and would have been motivated to do so for such desirable properties as increased flexural strength, as disclosed by Zahir et al. (table II).

Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Das et al. (U.S. 5,922,448) in view of Blyakhman (U.S. 5,591,811) in further view of Zahir et al. (U.S. Pat. 4,127,615).

Regarding claim 13: Das et al. teaches adding an epoxy resin (abstract), curing agent/catalyst (col. 8 lines 29-54), a phenol and an imidazole at a weight ratio of imidazole to phenol of 15:85 to 25:75 to make a curable composition (col. 9 line 40-col. 10 line 7).

Das et al. does not teach adding the compound of general formula (I). However, Blyakhman teaches adding the compound of formula (I) to an epoxy resin (col. 4 lines 54-58), a curing agent (col. 5 lines 41-48) and a phenol (col. 5 lines 41-48). At the time of the invention a person having ordinary skill in the art would have found it obvious to add in the imidazole of general formula (I) with the composition of Das et al. and would have been motivated to do so because 1-imidazolylmethyl-2-naphthols are effective catalysts for curing epoxy resins and provide epoxy resin systems with prolonged room temperature stability and fast curing as stated by Blyakhman (abstract).

Das et al. does not teach the specific phenols of the instant application. However, Zahir et al. teaches an epoxy resin, o,o'-diallyl-bisphenol A (col. 2 line 49), imidazole (table I). At the time of the invention a person having ordinary skill in the art would have found it obvious to combine the o,o'-diallyl-bisphenol A (DABA) of Zahir et al. with the composition of Das et al. and would have been motivated to do so for such desirable properties as increased flexural strength, as disclosed by Zahir et al. (table II).

Regarding claim 14: Das et al. further teaches dissolving components before curing at a temperature of 65-75 °C (col. 9 lines 39-52).

Claims 8-11, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blyakhman (U.S. 5,591,811) in view of Das et al. (U.S. 5,922,448) and Klein et al. (U.S. 6,245,835) and Zahir et al. (U.S. Pat. 4,127,615).

Regarding claim 8: Blyakhman teaches the compound of formula (I) as set forth above in the amount of 2-25 parts by weight. Blyakhman further teaches an epoxy resin (abstract) made of a bisphenol A, which has 2 epoxy functional groups per molecule at a molecular weight range of 1000 to 1500 (col. 5 lines 5-10). This corresponds to an epoxide equivalents range of 0.5 to 0.75 epoxide equivalents/kg. Blyakhman also teaches adding a curing agent for the epoxy resin and one or more additives (col. 5 lines 41-53).

Blyakhman does not teach a phenol at the weight ratio of imidazole to phenol of 10:90 to 80:20. However, Das et al. teaches adding 15-25% by weight of the imidazole catalyst to a phenol, which is a weight ratio of 15:85 to 25:75 (col. 9 lines 61-67 and col.

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8 lines 44-46). At the time of the invention a person having ordinary skill in the art would have found it obvious to add a phenol at this weight ratio and would have been motivated to do so because at this weight ratio the phenol cures the epoxy resin and increases thermal stability and overall mechanical properties.

Blyakhman does not teach the specific phenols of the instant application. However, Zahir et al. teaches an epoxy resin, o,o'-diallyl-bisphenol A (col. 2 line 49), imidazole (table I). Blyakhman and Zahir et al. are combinable because they are both concerned with the same field of endeavor, namely epoxy resins cured with imidazole catalyst. At the time of the invention a person having ordinary skill in the art would have found it obvious to combine the o,o'-diallyl-bisphenol A (DABA) of Zahir et al. with the composition of Blyakhman and would have been motivated to do so for such desirable properties as increased flexural strength, as disclosed by Zahir et al. (table II).

Blyakhman also does not teach the curing agent to have 0.5 to 1.5 functional groups per epoxide group. However, Klein et al. teaches a curing agent for an epoxy resin having 0.5 to 2 functional equivalents per epoxy group (col. 11 lines 38-46). Blyakhman and Klein et al. are combinable because they are both concerned with the same field of endeavor, namely cured epoxy resins with an imidazole catalyst. At the time of the invention a person having ordinary skill in the art would have found it obvious to combine the functional group ratio of Klein et al. with the composition of Blyakhman and would have been motivated to do so because with this ratio of functional groups the composition will not have much excess unreacted epoxy resin or curing agent, which would lead to decreased viscosity.

Regarding claim 9: Blyakhman and Klein et al. both further teach a polyamine curing agent (Blyakhman col. 5 lines 41-48 & Klein et al. col. 16 lines 14-49).

Regarding claim 10: Klein et al. further teaches a polyoxypropylenediamine curing agent (col. 16 line 38). At the time of the invention a person having ordinary skill in the art would have found it obvious to use a polyoxypropylenediamine as a polyamine curing agent and would have been motivated to do so because polyoxypropylenediamine is more reactive curing agent for epoxy resins.

Regarding claim 11: Blyakhman teaches using cycloaliphatic epoxy resins (col. 3 lines 17-48).

Regarding claim 15: Das et al. teaches a prepreg comprising the claimed composition (col. 10 lines 40-60). At the time of the invention a person having ordinary skill in the art would have found it obvious to make a prepreg with the composition and would have been motivated to do so because it is known in the art that an application for epoxy resins is prepreps.

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-6, 8-11, 13-15 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP



§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

### ***Correspondence***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Megan Arnberg whose telephone number is (571) 270-3292. The examiner can normally be reached on Monday - Friday 7:30-5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on (571) 272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

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For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark Eashoo/  
Supervisory Patent Examiner, Art Unit 1796  
11-Apr-08

/M. A./  
Examiner, Art Unit 1796